

Observations on Parturition, Litter Size, and Foetal Development at Birth in the Chocolate Wattled Bat, *Chalinolobus morio* (Vespertilionidae)

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Introduction

The majority of Australia's insectivorous bats give birth to one or two young during a single parturition period in the spring or summer of each year (McKean and Hamilton-Smith, 1967). Observations on parturition in bats are few and in most instances these observations were made on bats held in captivity. However, the review by Wimsatt (1960) provides a number of interesting generalizations regarding parturition in bats:

The foetus is presented in the breech position in many vespertilionids and in some molossid bats, whereas head presentation appears to be common in the families Rhinolophidae and Pteropidae. Both types of presentation occur in the family Phyllostomatidae (Bhatnagar, 1978).

The practice of eating the afterbirth (placentophagia) by the female is common in the family Vespertilionidae, but variable in occurrence in other families.

Bats are very large at birth; a single young may be 25% of the postpartum weight of the female, whereas the combined weight of twins can exceed 30% of the mother's weight.

Study Site

The following observations on *Chalinolobus morio* were conducted in 1973 at an attic nursery site, located in

Bunya Mountains (lat. 27° 75' S; long. 151° 58' E; elevation 1050 m), Queensland.

Parturition

At 1320 hours (E.S.T.) on 20 October, 1973, a female was observed in the early stages of parturition. The foetus was in the breech position with the legs, tail and lower rump protruding from the vagina. Portions of the ruptured amnion were also extending from the birth canal.

The female was in the 'vespertilionid parturition position'. She was suspended by both feet and the left thumb so that the head was directed upwards. The tail and uropatagium were sharply recurved towards the abdomen and the right wing was partially enclosing the body.

At 1330 hours the foetus was delivered into the pouched uropatagium. The final stages of delivery were probably aided by the flexing action of the legs and lower torso of the foetus. Immediately after delivery the neonate crawled, without any assistance from the female, to the right mammary gland and attached to the teat.

The neonate remained attached to the undelivered placenta via the umbilicus for 80 minutes after birth. During this time the female periodically engaged in an intensive grooming sequence which usually commenced with gentle licking of the neonate followed by vigorous chewing and licking of the vaginal region and uropatagium. Eighty minutes after

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Table 1. Measurements of *Chalinolobus morio* at birth compared with adult females. October, 1973.

Parameter	Individual					
	Mother	Neonate	Mother	Neonate	Mother	Neonate
Age of neonate (hours)	—	80	—	240	—	180-240
Total length (mm)	96.6*	45.2	98.5	44.0	96.6*	—
Forearm length (mm)	37.6**	13.3	37.6**	13.3	37.6**	11.6
Wingspan (mm)	266.5*	92.5	274.0	92.1	266.5*	—
Nett weight (gm)	8.0	2.0	8.2	1.9	8.5	1.5

* Mean of 3 post-partum females

** Mean of 32 adult females.

birth the placenta and attached membranes were pulled from the vagina and eaten by the female. The umbilicus was severed in the process. The female remained in the parturition position during the entire period. After the umbilicus was severed the female was collected in order to measure and weigh the neonate.

Breech presentation results in the head of the foetus being orientated towards the mammary glands at birth and therefore minimizes the number of manoeuvres required in order to reach the teats. This feature of parturition, together with the posture of the female during delivery and the persistent umbilicus, minimizes the risk of the neonate becoming detached from the female.

Development of the Foetus at Birth

At birth, chocolate wattled bats appear naked to the unaided eye, except for a few long hairs on the face and the chin. The skin of the body is pink in colour, whereas the tail and wing membranes are darkly pigmented. The eyes are closed and the ear pinnae are folded forward against the head.

Neonates are capable of co-ordinated crawling movements at birth and often produce a faint 'cluck-cluck' sound when removed from the mother.

In *Chalinolobus morio*, the young are born with 22 deciduous (milk) teeth. The deciduous dental formula is

$$i \frac{2}{3}, c \frac{1}{1}, pm \frac{2}{2} = 22$$

The deciduous teeth, particularly the incisors, are very different in structure from the permanent teeth. The trilobed and recurved milk incisors probably assist the neonate in clinging to the teat or fur of the female (Allen, 1939).

The size of the foetuses at birth compared with adult females is given in Table 1. Single foetuses are approximately 25% of the mother's weight, whereas the combined weight of twins is about 35% of the adult weight.

Litter Size

In south-eastern Queensland, *C. morio* produces a single litter of one or two young each year. In 1973, 50% (n = 24) of females examined in September and October had twin embryos in the uteri. All of the single embryos were present in the right uterus.

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